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Improvising Places: The Fluidity of Space in Informal Settlements

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Abstract: This paper engages with how the incremental production of space works in informal settlements. As one of the critical challenges of urbanism in the cities of the global South, informal settlements cannot be simply addressed through ruthless practices of demolition and eviction since they can often be incrementally upgraded on the same site. Such practices of upgrading rely on a sophisticated understanding of how urban morphology and adaptation work in informal settlements. In this paper, I focus on the fluidity of space by drawing on a case study of an informal settlement in Pune, India. The key research methods are observation and visual recording. The results of this study provide a better understanding of how informal settlements work in terms of urban morphologies and adaptations. Such an understanding plays a significant role in exploring how the capacities of informality can be developed in consistency with the incremental upgrading of codes regarding public open space, access network, construction, and functional mix. This paper contributes to the ways in which built environment professions can effectively engage with incremental transformations of informal settlements.

Keywords: urban morphology; built form; spatial structure; informal settlement; urban form; informality; order; South Asia; informal urbanism; public space; adaptation

1. Introduction

The greatest challenges of urbanisation are found in the cities of the global South, where forms of urban informality take place outside state control, working as an asset for the urban poor to manage the condition of poverty and move beyond the regulatory order [1–6]. The task is to look hard at the cities of the global South where informal settlements are there to stay, although they have remained generally undocumented and invisible [7–9]. There are many informal settlements across the world accommodating about one billion people [10], a figure that is projected to be around two billion within 30 years [11]. Informal settlements have become one of the critical challenges of cities worldwide due to their prevalence and growthF. The aim here is not to fall into either pessimistic or optimistic views on informal settlements, but rather to explore the ways in which different forms of informality work in these settlements.

Over the last 50 years, different strategies have been adopted globally, ranging from denial, ignorance and demolition to tolerance, displacement and upgrading. However, the challenge of informal settlements cannot be simply tackled through forced eviction, demolition or displacement. With few exceptions that are located in hazard-prone areas, most of the existing settlements can be upgraded incrementally and on the same site. Such upgrading processes then rely on a sophisticated understanding of the existing morphologies, adaptations, and qualities of these settlements [12–15]. An elaborate understanding of urban morphology is crucial for better design interventions [16]. It is of great significance as certain practices of upgrading appear to be incompatible with adaptive processes of informal urbanism [17]. This paper aims to not evaluate certain upgrading projects or prescribe some definite solutions, but rather to explore the fluidity of space in informal settlements drawing on a

case study of an informal settlement in Pune, India. It is important to reach a better understanding of the ways in which informal settlements work in terms of their morphologies and incremental adaptations before jumping into some prescriptive conclusions about how these settlements can be most effectively upgraded.

2. Informal Settlements: Morphology and Typology

A limited morphological understanding, as Marshall and Çalişkan [16] argue, can give rise to poor design interventions. Upgrading informal settlements is not an exception here particularly when it comes to the critical role of the built environment professions and design intervention. The morphological studies of informal settlements generally communicate through a combination of description, physical analysis, and urban mapping to explore the materiality of these settlements. Bhatt and Rybczynski [18] provide a detailed analysis of building patterns with drawings illustrating the micro-scale informal morphologies. They identify several spaces including housing extensions, workplaces, small shops and streets. They also elaborate on the ways in which informal settlements are often places of working as well as living. They find that small shops often emerge where pedestrian flows are greater than the other parts of a settlement. Kellett and Tipple [19] also document how informal structures can be places of production as well as living. They also indicate how the mix of working and living may compromise the privacy of the households if working incorporates social interaction. Arefi [20] finds that there is a relation between the location of retail activities and hierarchy of roads within the access network. Non-residential activities including retail, commercial and religious uses often emerge along the main roads. It has also been found that the access network often follows the topographic conditions and encompasses a hierarchy of roads. Ribeiro [21] identifies three physical elements of pathways, fences and informal structures for defining urban spaces in informal settlements. He shows how the main streets are often shaped based on the trajectories of existing pathways in these settlements. Hillier et al. [22] find that the spatial layout of an informal settlement and its location in relation to the urban network play a critical role in the extent to which the settlement has become consolidated. They argue that self-organised economic activities often escalate in informal settlements with strong economically active edges. Sobreira [23] indicates that informal morphologies share some universal patterns of diversity in size and fragmentation in shape and distribution. A large number of fairly small structures coexisting with a small number of fairly large ones is a typical feature of informal morphologies.

While morphological studies focus on describing urban forms, typological studies engage with detailed classifications by types [24]. We study types to understand, predict, and shape urban change [25]. Typology can also be considered as a tool to provide a better understanding of typical processes and forms of informality in informal settlements. An extensive typology has been introduced by Dovey and King [26]. This typology sheds light on different forms of informal settlements in a global context and takes into account the process of growth in terms of settling, inserting or attaching. Drawing on this typology, it is shown how a district within a city may also accommodate different forms of urban informality and incremental adaptations [27]. Avoiding a binary view of formal and informal, a recent attempt to explore the relations between formal and informal morphologies is a multiscale typology developed by Dovey and Kamalipour [28]. An important distinction in this typology is between the production of buildings at the scale of architecture and access network at the scale of urban design. This typology includes a matrix of nine possible conditions. Elsewhere, a typology of public/private interfaces in informal settlements is developed based on two criteria of connectivity and proximity to the public space [29]. In a more recent study, Jones [30] has identified four primary types of public/private interface including aligned, setback, set forward, and set above. The dynamics of incremental urbanisms and the ways urban morphologies work in informal settlements are also explored, drawing on multiple case studies in Southeast Asia, South Asia and South America [31].

Several research gaps have been identified by reviewing the literature at the intersection of informal settlements and urban morphology. While informal settlements have been a line of inquiry in

urban planning and geography with a primary focus on informality conception, urban governance and socio-political processes, the morphologies of these settlements have remained understudied [26,32,33]. In addition, investigating multiple case studies across different contexts has also remained limited in morphological studies of informal settlements. There are a few studies drawing on multiple cases from different contexts [7,23,28,29,31,34]. This paper builds upon an emerging body of work engaging with the challenge of exploring the morphologies of informal settlements in a global context [7,27–29,31,35].

3. Research Methods

This paper draws on a case study in the Yerawada district, which is one of the largest pockets of informal settlements located in the northeast of Pune, India. The study area is a part of the Mother Teresa Nagar, a dense and consolidated settlement incorporating a mix of self-organised access networks and buildings in Yerawada. The case study selection rationale is close to what Flyvbjerg [36] outlined as critical and information-oriented cases. Nonetheless, this is an evolving study with no claim that this specific case can represent the broad range of informal settlements. This is part of a broader study based on fieldwork in 2014 and 2015 [35]. Special events and extreme climatic conditions have been avoided during fieldwork to capture a snapshot of a typical condition. Multiple methods were adopted to explore the ways in which urban morphologies and adaptations work with a qualitative approach. Most data on building density, functional mix, access network, public-private interface, loose parts, and street-life intensity has been collected through observation. Visual recording including photography and field notes has been used as a supplementary method. Archival records including aerial photos from Google Earth have been used as well.

Several limitations have been identified in data collection and analysis. Informal settlements are among difficult environments for conducting fieldwork. The aim was to use unobtrusive methods and limit the scope of fieldwork to public space. Observing private spaces and permeating parts of the access network that appeared to be impenetrable have been avoided. While some laneways seemed accessible on aerial photos, there were impenetrable on the ground. At times, socio-spatial clues discouraged exploring certain parts of the study area during fieldwork. Photography has also limitations in certain parts such as narrow laneways. Digital tracing of aerial photos has been found challenging as most narrow laneways remained invisible from up in the air. There is no claim here to be comprehensive and thorough since the required data was not often available or accurate enough for micro-scale analysis of urban morphologies and adaptations. Ensuring accuracy becomes challenging in informal settlements due to limited availability of data at the micro-scale and inevitable practices of incremental transformations changing the existing urban morphology. Informal settlements have largely remained undocumented, neglected at the local government level and invisible on official maps, thus marginalising them even further.

4. Case Study Analysis

Pune is the second largest city in the state of Maharashtra located on the banks of the Mutha and Mula rivers. It has been transformed from a traditional village called *Kasba* in the 16th century to a metropolitan region with a thriving economy [37]. Pune has a population of about three million people, with more than 40 percent living in informal settlements [38]. There is a mix of both small and large pockets of informal morphologies distributed across the city producing different forms of informality [31]. Most settlements have concentrated morphologies often produced through practices of squatting. Yerawada is located in the northeast of the city on the northern bank of the Mutha River (Figure 1). The area emerged as a squatter settlement on state-owned land in the 1960s when growing industries attracted flows of workers [39]. Land ownership in Yerawada is a mix of private and state government [40]. The selected case study has been upgraded incrementally *in-situ* through an internationally recognised participatory process [12,41]. The number of temporary structures used to be about more than two times larger than permanent ones [41]. In India, such temporary structures with makeshift materials are called *kutcha* in contrast to the permanent ones with relatively durable

materials that are called *pucca* [42]. The selected study area is one of the informal morphologies, which is highly dense, irregular and labyrinthine (Figure 1). Undertaking the task of incremental upgrading in such a dense area involved the replacement of certain *kutcha* structures with *pucca* ones on the same site and a high level of community involvement.

Figure 1. The case study in Pune. Satellite Images: Google Earth; Photos: Hesam Kamalipour.

The access network is irregular, yet well connected and highly permeable with a combination of an average block perimeter of about 70 m and a few dead ends of less than 15 m deep. The study area includes a large number of fine-grained footprints. The gross coverage is about 70 percent with no private open space at the ground level. Building height mostly ranges from two to three storeys with a few one-storey or four-storey buildings. While the need to maintain flows at ground level prevents encroachments on public space from blocking the laneways, the cantilevers often touch each other on the upper levels and block natural ventilation and light of the public space (Figure 2, left).

Public space is limited to laneways, which accommodate a range of everyday activities such as drying or washing clothes, cooking and drying fruits. At times, public space becomes appropriated in a way that makes it almost impossible to pass through the settlement (Figure 2, lower right). In a sense, this is a temporal change of public space to a kind of quasi-public space where control through appropriation plays a key role in claiming public space for private interest. The main laneways are not likely to become choked off by the appropriation of public space while the areas located deep within the settlement often become impenetrable due to the accumulation of such appropriations.

The area is mostly residential. Yet, there are some shops located in different parts of the settlement, mostly along the main laneways and close to intersections where flows of people are more than the other parts of the settlement. Several buildings accommodate a vertical mix of living and visiting and the areas with high levels of street life are often close to the places of visiting and living. This pattern of functional mix usually includes a shop at the ground level and one–two levels of residential units on the upper floors (Figure 3, upper left). This kind of vertical mix provides the possibility of direct

linkage between public and private spaces at the ground level through shops and surveillance by overlooking from residential units on the upper floors.

Figure 2. The blockage of sunlight and ventilation (**left**); a one-storey *kutcha* structure (**upper right**); extending the private activities to public laneways (**lower right**). Photos: Hesam Kamalipour.

Shops are different in terms of their location within the settlement. Figure 3 (upper middle) shows a shop that is located at the ground level along one of the main laneways within the settlement with the upper-floor residential unit accessible from the public space by an external staircase. Several shops are also located at the intersections where three or more laneways shape a node within the access network (Figure 3, upper right). Figure 3 (bottom) shows a strip of shops located along the main street. These shops are larger than the ones located within the settlement.

There is a mix of public/private interface types along the laneways. Based on the criteria of connectivity and proximity to the public space [29], interface types range from impermeable (e.g., blank walls) to porous (e.g., active shopfronts with entrances), on one hand, and from adjacent to public space to setback on the other. The impermeable interfaces line the narrower side lanes while the main laneway incorporates a mix of different levels of setback and porosity. Setback spaces accommodate a range of everyday activities such as seating, washing or drying clothes, cooking, socialising and storing materials or appliances (Figure 4, left). Shops often include a combination of an entrance and a shopfront, used for exchanging products and purchasing goods (Figure 3). Impermeable interfaces are blank walls or impermeable edges, which are often limited to corner houses. Figure 4 (right) shows how impermeable public/private interfaces accommodate temporary activities such as drying clothes, storing materials and parking a vehicle. Most areas in proximity to intersections and permeable public/private interfaces have a high level of street life.

Figure 3. A vertical mix of shops and residential units on the upper floors (**upper left**); a shop along the main laneway with an upper-floor residential unit accessible by an external staircase (**upper middle**); a one-storey shop located at a local intersection (**upper right**); a strip of shops with attached advertisements located along the main street (**bottom**). Photos: Hesam Kamalipour.

Figure 4. Types of public/private urban interfaces: setback (**left**); porous (**middle**); impermeable (**right**). Photos: Hesam Kamalipour.

Figure 5 shows physical traces from a range of activities and loose parts taking place within a threshold of up to 1 m from the edges of laneways. Loose parts include semi-fixed elements that frequently appropriate parts of the public space, yet on a temporary basis. Most of the loose parts are parked vehicles including motorbikes and bicycles. They often occupy a part of the public space as they are mostly parked in proximity to the houses (Figure 5, left). Storing domestic paraphernalia is a common activity, appropriating a part of the public space (Figure 5, middle). A few traces of growing plants are visible in the house fronts (Figure 5, right). At times, stored furniture and materials are also visible along the laneways. The concentration of loose parts on both sides of the public space often becomes more in deeper parts of the settlement, constraining flows of movement.

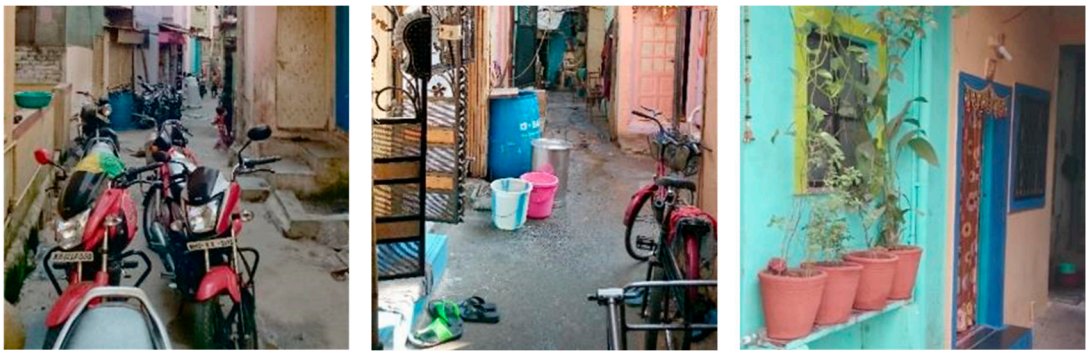

Figure 5. Loose parts in the study area including parked motorbikes (**left**), domestic paraphernalia (**middle**), and plant pots (**right**). Photos: Hesam Kamalipour.

Different construction materials are used in *kutcha* and *pucca* structures. Certain materials such as galvanised sheets are more likely to be used in *kutcha* structures. Such structures rarely exceed two storeys. In contrast, *pucca* structures may reach up to five storeys as they are often constructed using reinforced concrete and brick. Many permanent structures within the study area are rendered and painted through the process of upgrading, which involves the replacement of some *kutcha* structures with *pucca* ones (Figure 6, left). One can also find a vertical mix of both structures within the area (Figure 6, right). In this case, the added *kutcha* structure is considered as a temporary unit or room on top of the *pucca* levels.

Figure 6. Rendered and painted *pucca* structures (**left**); a vertical mix of *kutcha* and *pucca* structures (**right**). Photos: Hesam Kamalipour.

5. Incremental Adaptations

Thus far, the focus has been on capturing certain moments in the process of informal urban transformation. Yet, informal settlements are constantly in the process of incremental change, rendering every moment as ephemeral and temporary. Incremental adaptation is integral to the fluidity of space in informal settlements. The selected case study is particularly important as it illustrates the synergies and contradictions between formal and informal practices of urban transformation. Although a participatory process of incremental upgrading has been implemented in the study area and most of the *in-situ* housing replacements have been completed, it seems that the process of incremental adaptation is still in progress in the study area (Figure 7). The point is that informal changes persist even after formal practices of upgrading. In what follows, I identify some typical increments of change drawing on illustrations from the case study to provide a better understanding of spatial fluidity in informal settlements.

Figure 7. Adding a *kutcha* room (**left**); adding a *pucca* room (**middle**), adding an external staircase (**right**). Photos: Hesam Kamalipour.

Adding a room is a typical increment of change in Yerawada. Figure 7 (left) shows the addition of a *kutcha* room on top of a *pucca* structure. Another form of this increment is the addition of a *pucca* room (Figure 7, middle). Adding a room may take place both horizontally and vertically; however, the scarcity of land in such a consolidated settlement constrains the possibility of horizontal additions. In this case, adding a room extends both the living area and building height. Although the addition of a *kutcha* room is less permanent than the addition of a *pucca* one, it does not require much investment comparing to the addition of a *pucca* room. Adding a *kutcha* room also has the capacity to test potential resistance to vertical encroachments as it enables the possibility of its replacement by a *pucca* structure in the future. Adding a room also contributes to the generation of more income by providing the possibility of renting if a separate entrance is provided through an external staircase. Adding an external staircase is likely to permanently appropriate a part of public space where there is no setback in front of the building (Figure 7, right). Adding multiple rooms is another increment of change, which may include the addition of *pucca* and *kutcha* structures. The required materials are often stored in different parts of the settlement wherever space becomes available under an external staircase, against blank walls or within a setback area.

One of the other increments of change is the addition of roof terraces, balconies and verandas to existing buildings. This increment is about extending the living area by adding semi-private and semi-open spaces to a building by producing a kind of spatial enclosure. Verandas often appropriate a part of the adjacent laneways and change the public/private interface type to a setback by creating a semi-private space in front of buildings (Figure 8, left). Balconies work in different ways across the laneways with different widths. In narrow laneways, balconies are likely to block the natural ventilation and light of the public space where the heights of the facing buildings are more than two storeys. In wide laneways, balconies may provide the possibility of surveillance over public space (Figure 8, middle). The addition of a roof terrace provides a spatial enclosure on top of an existing building. A roof terrace may become horizontally enclosed by the construction of half-walls. A vertical enclosure may also be provided by adding a roof made up of galvanised sheets (Figure 8, right). Roof terraces, balconies and verandas provide the required space for accommodating those kinds of everyday activities that used to take place in public space, such as washing and drying clothes, and storing, cooking and drying fruits. Roof terraces can also be considered as an initial step paving the way for the addition of a room or multiple rooms in the future.

Figure 8. Adding a veranda (**left**); adding a balcony (**middle**); adding a roof terrace (**right**). Photos: Hesam Kamalipour.

One of the other increments of change is where the use of a part of the ground floor changes from residential to shop (Figure 3, upper left). It also changes the ways in which public and private spaces are related to each other. In most cases, a part of the interior space on the ground floor is allocated to a small shop. In effect, an accessible or impermeable interface becomes porous. While the existing floor area remains unchanged, the use of the building changes from residential to a mix of living and visiting. This increment is more likely to take place along the laneways where pedestrian flows attract the emergence of shops. Inhabitants may benefit from this increment in different ways. It provides the opportunity for generating income by renting or creating jobs. It can also contribute to the public space by attracting pedestrian flows and providing the possibility of socio-economic exchange and chance visits.

Replacing or repairing construction materials is another increment of change, which is about improving the construction quality and enhancing the image of existing buildings. This is a change from *kutcha* to the *pucca* condition. It is an informal process of upgrading where inhabitants replace the more temporary materials with the more permanent ones. This is also geared to the ways in which the image of an existing building can be transformed as it is often followed by rendering and painting. The dynamics of tenure can play a key role as well. Temporary structures have the capacity to test the tolerance of the state, among others, as they are generally conceived as easier targets for demolition than the permanent ones.

6. Discussion and Conclusion

Informal settlements are different in terms of their morphologies, typologies, and morphogenesis processes although they may share many spatial similarities. Such differences and similarities are yet to be explored across case studies and contexts to hopefully show some of the morphological range [28,35]. In this paper, I focused on the informal production of space and its fluidity, drawing on illustrations from a case study in Pune, India. The study area is a critical case as it incorporates a specific type of informal morphology, which is a mix of self-organised buildings and emergent access networks. Parts of the study area have also been incrementally transformed through cutting-edge participatory design interventions tailored to fit the existing urban morphology. The aim has been to serve as an initial step to enable a better understanding of informal morphologies and adaptations as such micro-morphologies and their dynamics have remained underexplored. While this study

contributes to an understanding of the capacities of informal settlements, it does not claim to develop a global understanding of the ways in which urban morphologies work in informal settlements merely based on a single case study. It was not also possible to gain the depth of interviewing that would reveal more about the particularities of the case study including the meanings of materials, the social, political and economic context as well as the longitudinal changes over time.

Some key morphological characteristics of the study area have been analysed. I pointed to building density in terms of height, grain size and coverage. Informal morphologies vary in height, yet do not generally exceed five storeys [26,31]. The height limit in informal settlements is often geared to the capacity of building structure and construction materials to allow for vertical accretions. The height of informal structures in the study area ranged mostly between two–three storeys. This is related to the construction materials and the capacity of lower levels to allow for the addition of more storeys. A mix of concrete structures and bricks was found common, which often allows for the addition of more storeys. The grain sizes were generally small. While a larger grain size can enable the addition of more storeys, the relations between grain size and building height is not necessarily linear. Coverage was also about 70 percent in the study area. The pressure for adding more storeys seems to be partially due to the scarcity of land. However, small grain sizes do not necessarily predict the addition of more storeys [43].

The distribution of functional mix follows certain patterns in the study area. A mix of a shop at the ground level and residential units on the upper floors was found as a typical condition. It has been previously shown how informal structures can accommodate a mix of living and working [18,19]. Such structures in the study area were generally located along the main laneways and close to intersections to make use of the pedestrian flows. The main laneways are often directly connected to a local street with vehicular movement and commercial strip, which supports a finding of Hillier et al [22]. Similar patterns of emergent functional mix have also been found in other informal settlements with different urban morphologies and morphogenic processes [20,31,43]. This implies how self-organised functional mix has the capacity to emerge in proximity to integrated locations and adapt over time [44].

A shown in the urban analysis, the study area incorporated a formal mix. This is reflected in the extent to which buildings have become distinctively personalised in terms of their appearance. Kellet [45] has previously elaborated on how the front facades in informal settlements may become the arena for distinction and display over time. The formal mix is also reflected in the distinctions between more temporary and more permanent structures. Using different construction materials, architectural details, entrances and paintings has given rise to a formal mix in the study area. While exploring the dynamics of place identity was beyond the scope of this paper, it is critical to note that place in informal settlements cannot be simply reduced to its materiality as spatiality and sociality are inseparable two-fold conceptions [46].

I also pointed to how street life and everyday activities are linked to the ways in which private territories were connected to the public realm. The relations between building density, functional mix, and access network come together in urban interfaces as everyday life spills out into the laneways at the ground level. The public/private interface plays a key role as it has the capacity to enable and constrain both social and economic exchange at the ground level where publicity and privacy intersect. The study area incorporated a mix of public/private interfaces. Impermeable interfaces were mostly located along the minor laneways intersecting the main laneways. Semi-public/private spaces between inside and outside are particularly useful in informal settlements as they accommodate a range of loose parts and activities [18,29]. However, they often appropriate a part of public space permanently or occupy an area that could have been potentially enclosed to extend private space and the built-up area.

Most public/private urban interfaces are found to be porous and connected to public space. For each building, public/private urban interface is the only edge that can work either as a border through which social and economic exchanges are facilitated or as a boundary for dividing privacy from publicity. The distinction made by Sennett [47] between borders as nodes of activity and boundaries as socio-spatial dividers is useful here. Social and economic exchanges are likely to be enabled by

porous or accessible interfaces and constrained by impermeable ones. This is the case for shops at the ground level with porous interfaces where the openness of the inside towards the outside plays a critical role in attracting pedestrian flows. All buildings have at least an accessible interface on one side to be connected to the public space. This is generally materialised through entrances or windows, which also enable surveillance, natural light and ventilation. The concentration of multiple points of entry along with a mix of different public/private interface types contributes to the fluidity of space and urban intensity in informal settlements.

Serving as the only public space within informal settlements, access network is often contested and subject to appropriation. This becomes particularly problematic where the appropriation of laneways constrains physical access. The analysis shows how the laneways have been appropriated in the study area, which includes a large number of loose parts located in proximity to public/private urban interfaces. This can be linked to the scarcity of land as well. The prevalence of loose parts is about the ways in which public space becomes appropriated for the more or less unplanned uses [48]. Loose parts generally take place within a threshold, which starts from the edges of public space and ends just before reaching the centre line of the laneways. While some of the loose parts such as appliances are attached to public/private urban interfaces, the others such as vehicles are detached from them. The other loose parts including furniture, construction materials, paraphernalia and drying clothes are often located between the two ends as they are not necessarily attached to public/private urban interfaces or close to the centre line of the laneways. While loose parts contribute to the fluidity of space in informal settlements, their prevalence can also escalate to constrain flows of movement within public space. This is critical when it comes to upgrading as focusing on the built form can only go so far when it comes to addressing the micro-scale governance of the public realm and loose parts as semi-fixed elements. Managing loose parts is a challenging task, which requires thinking about flexible codes to harness their capacity in meeting the everyday needs while enabling them to remain at once frequent and temporary.

Incremental change is integral to the fluidity of space in informal settlements. The selected case study is particularly important as it incorporates both formal and informal practices of urban transformation. I identified some typical increments of informal change in the study area such as opening a shop, replacing construction materials, and adding a room, multiple rooms, roof terraces or verandas. Informal changes rely on long-term preparation, which includes collecting and storing construction materials, arranging the required labour, and often negotiating with neighbours. The key point here is that informal adaptations persist even after formal practices of upgrading. A sophisticated understanding of incremental adaptations and informal codes can enable more nuanced upgrading approaches to harness the generative capacities of incremental urbanism and control its escalations or unintended consequences [49].

The question of public interest and appropriation of space in informal settlements can be explored by focusing on the ways in which public space works in this case study. On one hand, self-organised practices of incremental design and construction seem inevitable as they can meet the everyday needs of inhabitants. On the other hand, such practices can be considered as a form of privatisation where public space is being appropriated by informal accretions. The fluidity of space here is reflected in the ways in which the edges of public space change through incremental encroachments. As shown in this paper, such encroachments can take place in at least two ways. One includes extending private or semi-private space by encroaching on public space at the ground level and the other incorporates extensions on the upper floors. The former can reduce the overall area of the accessible public space and the latter can block the ventilation and light of the public space. Even if we consider the inhabitants as the relevant public, the governance of the common resources such as public space requires specific attention. It is in the interest of each household to extend their private or semi-private space, but we need to ask if it would also be in the interest of the community as a whole to end up with a dysfunctional public space that can merely provide physical access to dwellings. Informal settlements can become slums where competitive private interests take over the space, air and light of the public

realm. The prevalence of informal encroachments can escalate materialising what is known as the 'tragedy of the commons' [50] in the context of self-organised settlements.

Practices of incremental upgrading on the same site can take place through informal and formal processes of change. Informal processes of change take place every day through self-organised practices of accretion and appropriation. The study area has gone through a formal process of change due to which the settlement has been incrementally upgraded on the same site adopting a participatory approach. Diagnostic mapping and maintaining morphological coherence have been among the key spatial features of this formal process of change. But why enabling morphological consistency matters when it comes to incremental practices of upgrading on the same site? Addressing this question requires a critical engagement with urban morphology in relation to a range of socio-economic and socio-cultural forces as well as individual needs and desires. As shown in this paper, self-organised processes of change have a capacity to sustain differences at the building scale and enable coherent morphologies at the settlement scale. The public/private interface and the public space at the ground level also play a key role in facilitating social and economic exchange. Transforming the existing morphology will inevitably have impacts on the ways in which informal settlements work. Developing informal settlements through formal practices of change in alignment with the existing morphology and typology is then critical to avoid disrupting the established social and economic networks.

While it is crucial to avoid aestheticisation and romanticisation of informal urbanism, there is much to learn for the built environment professions from self-organised practices of incremental adaptation to rethink their scope and obsession with the fixity of permanent outcomes and formal orders. Although informal settlements may invoke constructed images of poverty, everyday struggle, and negative symbolic capital, they are also places of street-life vitality, active socio-economic exchange, and urban intensity. The capacities of urban informality to produce innovative, culturally sensitive and adaptable solutions to address housing challenges have largely remained underexplored [51]. Proposing some prescribed housing solutions is beyond the scope of this paper, yet analysing the morphologies and adaptations of informal settlements is critical for exploring the space of possibilities in order to develop in consistency with what already works in these settlements. Moving towards sustainable upgrading of informal settlements requires a change of mindset to at once harness the productive capacities of informality and manage its destructive forces producing slum conditions.

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